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AGS DIVISION TECHNICAL NOTE
No. 169

BUFFER READER MULTIPLEX SYSTEM

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Function

To read analog signals from multiplex cross bar system.

Method

Use an 8-bit, high speed analog-to-digital converter BB ADC82-1024 points.

Operation

As seen by block diagram it is up to user to set up conditions for viewing analog signals.

Example

A shows how to run BRDIS, looking at A13I, B7I and TNK9I – Plot A shows result without changing any factors.

B shows how to retrieve a save data and its setup—same as A except user used expanded scale Plot B.

Program

BRDIS is analogous to a smart oscilloscope with four input channels. Given up to four analog input signal names associated with the cross-bar system, it will appropriately sample, digitize and display the signals with respect to a common x-axis and individually appropriate y-axes. Associated with each signal are the following parameter names (also identified in the cross-bar system):

1. Clock-rate signal name (100 Hz, 1 KHz, 10 KHz, 100 KHz, RFCLK).
2. Start trigger signal name (TO, INJPK, TFHCE, BRDT1, BRDT2).
3. Gain signal value (0.10 to 10.00).

Presently, function reader A is associated with "gain-signal-amplifier" device: RIN BRGNB, and function reader B with "gain signal amplifier" device RIN BRGNB.

The program will attempt to obtain all the above parameters, for each analog signal named, from MUX.DAT(25,27) file. Any missing parameters will be individually asked for as needed. The user should be aware when specifing multiple signals, that the program uses the start trigger and clock-rate signal names associated with the first analog signal specified.

Program BRDIS starts by asking the user to identify the function reader/ digitizer which will be used to digitally capture the sample. Currently, function readers A or B are options, both of which are assigned Datacon channels on PDP8E-PPB (addresses 124 and 126 respectively). BRDIS continues by asking the user to specify the analog signal name and their associated gain factors. These pairs of parameters are to be specified, separated by commas and ordered as follows:

Analog signal 1, gain 1, analog signal 2, ..., gain 4.

The program will check the specified signal names and associated parameters for validity, prompting the user for replacements of any illegal names. Subsequently, the program will iteratively route each set of analog signals to the function reader/digitizer, and sample with respect to the clock rate, gain, and start trigger signals. The program solicits the plot or list data command from the user at an appropriate time.

The following is a list of controls which are not specifically asked for, but may be typed at the appropriate times during execution:

Control Verb	Program Step Where Control is Valid	Control Definition/Action
Restart	Global (may be typed in response to any prompt)	Returns to beginning of program.
Program	Global	Types the help file in paginated mode. After each page, type return to continue.
Help	Global	Types a shorter version of the help file which just defines the control commands allowed by the program.
Return Key	Global	Program will use the previous entry as the valid response and continue.

Control Verb	Program Step Where Control is Valid	Control Definition/Action
E	After completion of and full plot	Program exits plot mode and returns to beginning.
XU	" " "	User determines x-axis.
XP	" " "	Program determines x-axis.
YU	" " "	User determines the y-axis.
YP	" " "	Program determines the y-axis.
Setup	" " "	Program will display the cross-bar routing of the analog signals (note: only the first signal name will be displayed).
CK	After completion of any full plot	Allows user to change clock-rate signal.
ST	" " "	Allows the user to change start-trigger sig.
Gain	" " "	Allows the user to change gain factor.
D##	" " "	Allows user to plot the value constituting the difference between the old data minus the new data multiplied by the two digit number (##).
SD	" " "	Save current plot data and associated parameters on disk (program asks for file name and project/programming area).
GD	In response to request for signal names and their assoc. gains, or after completion of any full plot	Retrieve old plot file and re-display.

^C (A) EXAMPLE HOW TO RUN BRDIS

Note Y & X axis are pick by program unless otherwise
changed

^C

.RUN BRDIS

WHICH FUNCTION ? A OR B ? B

MPX SIGNAL NAME/S, GAIN SIGNAL FACTOR/S,...?
?A13I,1.0,B7I,1.0,TNK9I,2.0 ↵

SET TO PLOT FROM DATA PT.   1 TO 1023
IF YOU WANT TO CHANGE RANGE, TYPE NEW RANGE
FROM,TO ?   ↵

RUN BRDIS (B) EXAMPLE HOW TO GET SAVE DATA & SETUP
                        Y & X axis changed by user
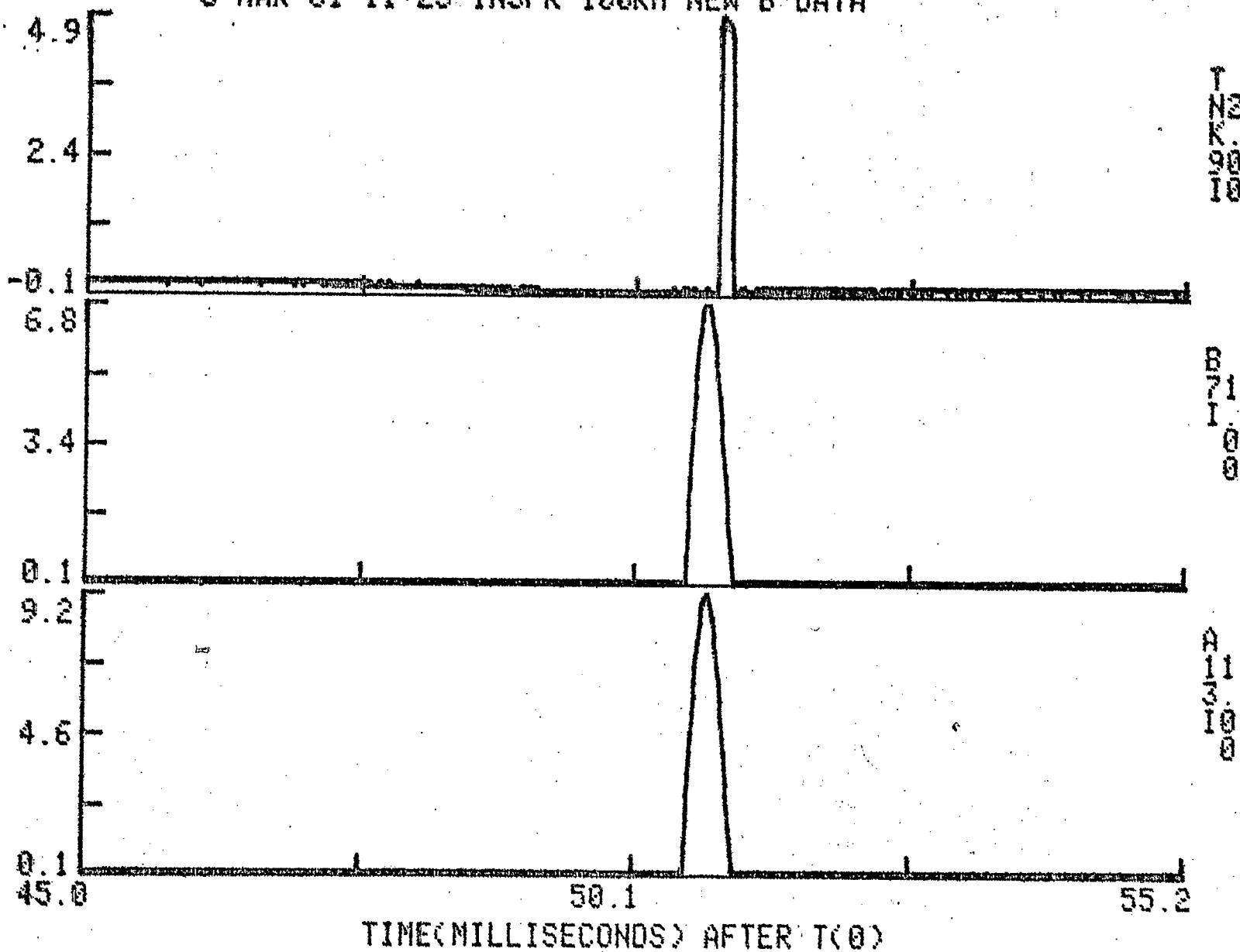
WHICH FUNCTION ? A OR B ? B↵

MPX SIGNAL NAME/S, GAIN SIGNAL FACTOR/S,...?
?GD ↵

FILENAME CONTAINING OLD DATA? ABBP ↵
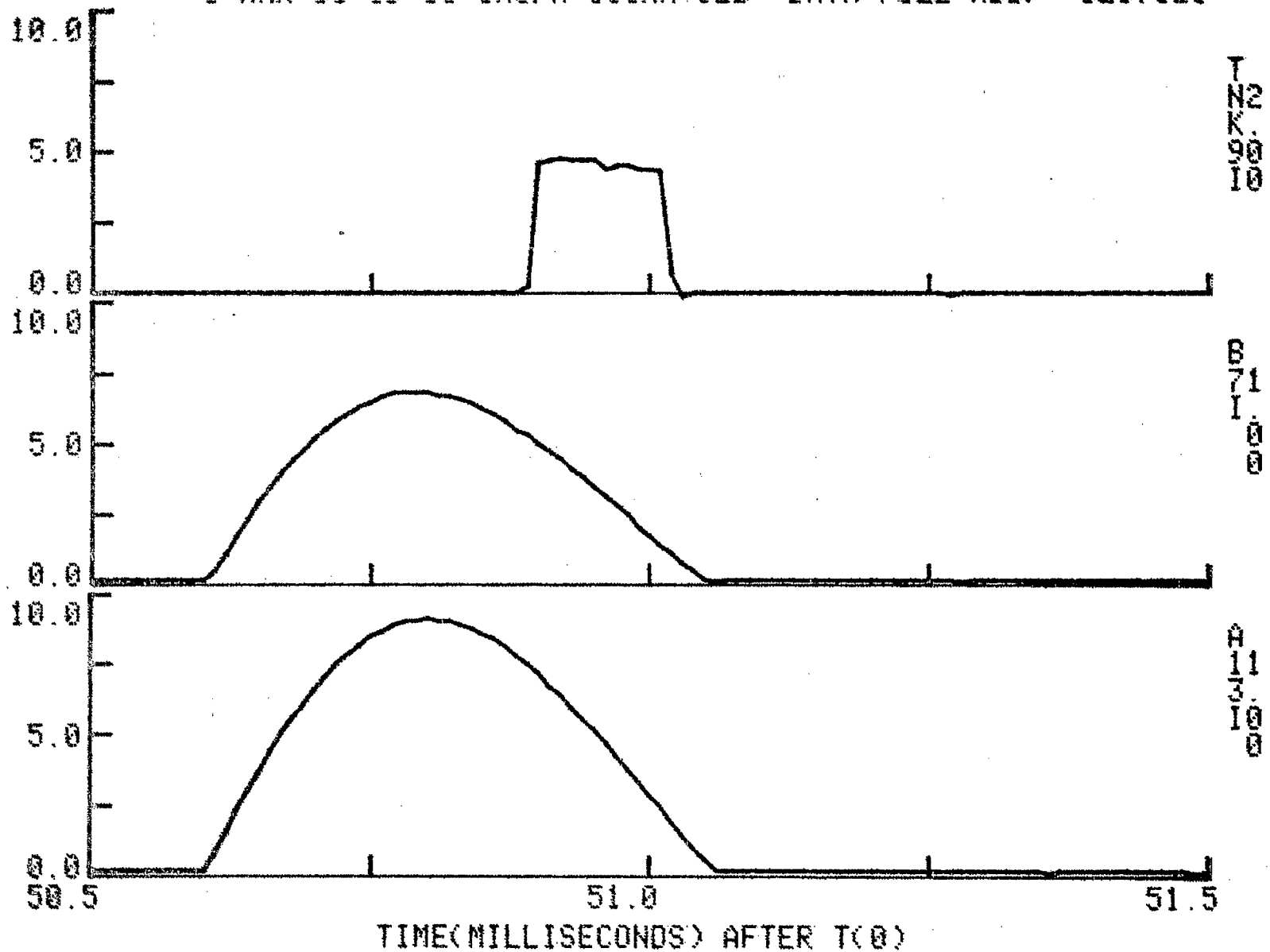
PROJ.,PROG. AREA TO RETRIEVE FILE ABBP (PJ,PG)?25,25 ↵

EXAMPLE A

5-MAR-81 11:23 INJPK 100KH NEW B DATA

TIME(MILLISECONDS) AFTER T(0)

EXAMPLE B

5-MAR-81 09:38 INJPK 100KH OLD   DATA FILE:ABBP ^025,025^

TIME(MILLISECONDS) AFTER T(0)

Address 112,113   114,115   116,117
       CLOCK MUX 32   START TRG MUX 32   Analog MUX 16

100 KZ   To   IXB C   INPUTS
1 KHZ   INJPK   D   FROM
10 KHZ   TFKE   EXB C   CRossbar
100 KHZ   BRDT1   D   mux
RFCK   BRDT2   FXB C
SP1   SP1   D
SP2   SP2   SP1
                                         SP2
        A B   A B   A B

DIVIDER
  &
PULSE AMP.

        A B   A B   Address   A   B   101
                                          100
                                               VARABLE
                                               GAIN 0-10

                    CK   CK
                    A   B
BUFFER   ST   Analog   Analog
READER   TRG   Sig   ST TRG Sig
                        B/R   B/R
        Address 124   A   Address 126   B
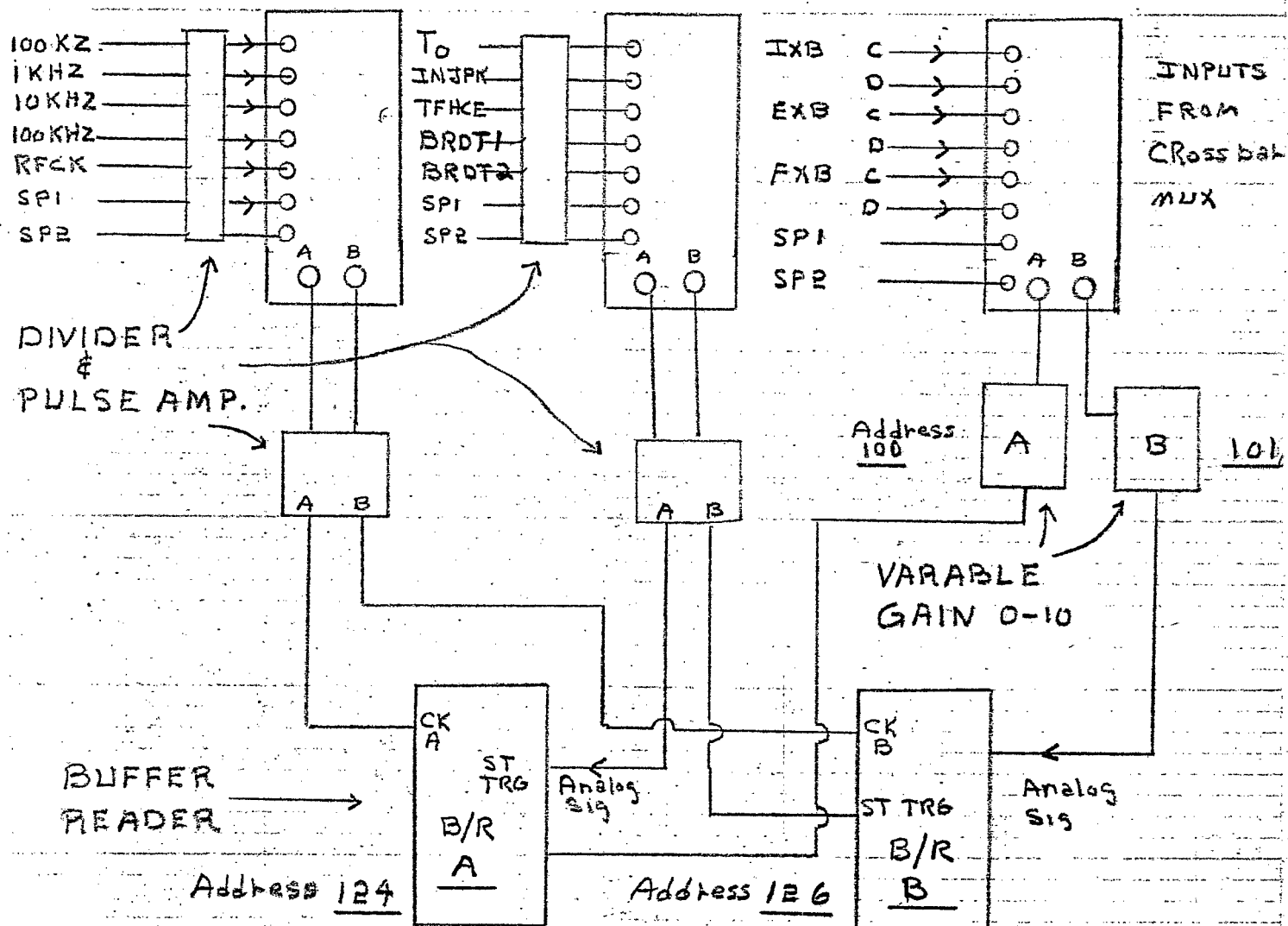
DRAWING NUMBERS

    BUCKET   DO9-E1247-3
    DIVIDER & PULSE AMP. " - E1258-3
    VARABLE GAIN AMP.   " - E1285-3
    BUFFER READER   " - E1240-4
    MUX 16 CHANNEL   " - E 935-4
    MUX 32   "   " - E 810-3
    POWER SUPPLY CONTROLER " - E 492-3